

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A rotary product processing device comprising:

(Aa) a frame comprised of a pair of generally upright end plates in engagement with at least one generally horizontally extending sidewall spacing the end plates apart with one of the end plates disposed adjacent an infeed end and the other one of the end plates disposed adjacent a discharge end;

(Bb) a-an elongate and generally horizontal perforate product processing chamber carried by the frame with the perforate product processing chamber having an infeed disposed adjacent one of the end plates and an outlet disposed adjacent the other one of the end plates;

(Cc) an auger disposed in the product processing chamber between the pair of end plates and capable of urging by rotation a plurality of products received in the product processing chamber from an entry location at or adjacent the infeed toward and out the discharge;

(Dd) a drive operatively coupled to the auger and carried by one of the end plates the drive disposing the drive inboard and between the pair of end plates with the drive in overlapping relationship with part of the product processing chamber~~the frame that causes rotation of the~~
auger.

2. (currently amended) The rotary product processing device of claim 1, further comprising a drive arrangement disposed at an angle relative to the drive with the drive arrangement operatively coupling the drive to the auger and the drive arrangement disposed adjacent and along one side of the same one of the end plates that carries the drive~~wherein the frame is comprised of a pair of end plates that each rest on the ground and a sidewall that extends from one of the end plates to the other one of the end plates.~~

3. (currently amended) The rotary product processing device of claim 12, wherein the ~~frame is comprised of an end plate to which the drive is mounted~~ drive arrangement comprises a drive wheel mounted to an output shaft of the drive and coupled by an endless flexible member to a driven wheel in operable communication with the auger.

4. (currently amended) The rotary product processing device of claim 32, wherein the end plates and the at least one sidewall comprise a housing that encloses the product processing chamber and the auger, and further comprising a cover overlying the drive arrangement and the one of the end plates that carries the drive and drive arrangement defining a drive arrangement housing that substantially encloses the drive arrangement~~drive is comprised of a motor coupled to a gearbox that is mounted to the end plate.~~

5. (currently amended) The rotary product processing device of claim 1, wherein at least one of the pair of end plates has a product passageway adjacent one of the infeed and discharge and further comprising:

(1) a journal in operable cooperation with the auger adjacent one of the infeed end and discharge end; and

(2) a bearing arrangement comprising a generally U-shaped bearing cradle of one-piece and unitary construction that (i) is carried by the at least one of the pair of end plates, (ii) extends about at least part of the periphery of the product passageway formed in the at least one of the pair of end plates, and (iii) presents a generally U-shaped bearing surface towards the journal so rotatively supports the journal during journal rotation~~the frame is comprised of a pair of end plates that each have an annular bearing that rotatively supports the auger.~~

6. (currently amended) The rotary product processing device of claim 5, wherein the auger comprises a plurality of generally helically extending auger flights, each of which is engaged with the product processing chamber such that both rotate in unison, ~~and wherein each annular bearing rotatively contacts one end of the product processing chamber.~~

7. (currently amended) The rotary product processing device of claim 51, further comprising a bearing of one-piece, unitary, non-metallic, and substantially homogenous construction carried by each one of the pair of end plates with each bearing having a rotary bearing surface that is curvilinearly contoured along an axial direction generally parallel to an axis of rotation of the product processing chamber providing rotary bearing support for journal connected to the auger ~~wherein each bearing is immovably fixed to one of the end plates and each bearing is of non-metallic construction.~~

8. (currently amended) The rotary product processing device of claim 51, further comprising an arcuate bearing of one-piece, unitary, non-metallic, and substantially homogenous construction wherein each bearing is immovably fixed-mounted via a plurality of fasteners to each one of the end plates and with each bearing having a journal-contacting rotary bearing surface formed by an inner radial surface of the bearing and each bearing having three angularly spaced apart mounting apertures radially of the rotary bearing surface each of which receives one of the plurality of fasteners enabling angularly indexing of the bearing changing the angular location of which part of the rotary bearing surface is subject to wear by changing where rotary bearing contact is made with the journal ~~is indexable to move its wear surfaces so as to encourage more uniform bearing wear.~~

9. (currently amended) The rotary product processing device of claim 1, further comprising an infeed end annular bearing arrangement disposed at one end of the product processing chamber that is immovably fixed to and abutting against one of the end plates and bounding the periphery of an infeed passage formed in the one of the end plates with the inner radial surface of the infeed end bearing arrangement comprising a rotary bearing surface rotatively supports supporting the ~~at least one end of the rotary product processing chamber and the auger adjacent the infeed end,~~ and ~~an~~ a discharge end annular bearing arrangement disposed at the other end of the product processing chamber that is immovably fixed to and abutting against the other one of the end plates and bounding the periphery of a discharge passage formed in the other one of the end plates with the inner radial surface of the discharge end bearing arrangement comprising a rotary bearing surface rotatively supports supporting the other end ~~at least one of the rotary product processing chamber and the auger adjacent the discharge end.~~

10. (currently amended) The rotary product processing device of claim 1, wherein the product processing chamber has a journal at each end that is rotatively supported by a non-moving arcuate bearing fixed to each end plate having an elongate arcuately extending bearing surface that rotatively supports one of journals along a complementarily contoured arcuate portion of its circular outer surface.

11. (currently amended) The rotary product processing device of claim 1, wherein the product processing chamber has ~~a~~an outwardly projecting axially extending circular journal at each end that is cradled by a non-moving arcuate bearing that is of one-piece, unitary, homogenous and non-metallic construction fixed to the frame with one bearing having an arcuate, elongate and non-rotatable radially inner bearing surface cradling and in bearing surface contact with at least a portion of the outer circumference of the journal disposed at or adjacent the infeed end and the other bearing having an arcuate, elongate and non-rotatable radially inner bearing surface cradling and in bearing surface contact with at least a portion of the outer circumference of the journal disposed at or adjacent the discharge end and wherein the bearing surface of each bearing has an elliptical or spherical transversely extending outer bearing surface contour.

12. (currently amended) The rotary product processing device of claim 1, wherein the frame comprises an end plate of one piece and unitary construction that carries the drive such that the drive is disposed above the rotary processing chamber such that it overlies part of the rotary processing chamber.

13. (currently amended) The rotary product processing device of claim 1, wherein ~~the frame comprises a pair~~ each one of the end plates is of one piece and unitary construction and ~~a the at least one sidewall comprises an elongate sidewall panel~~ of one piece and unitary construction that has a pair of side edges, with one of the side edges abutting one of the end plates and the other one of the side edges abutting the other one of the end plates, wherein each side edge has a plurality of locator tabs extending outwardly therefrom that are each received in a locator slot disposed in a corresponding one of the end plates.

14. (currently amended) The rotary product processing device of claim 13, wherein each locator tab and each locator slot extend diagonally and when mated such that each locator tab is received in its corresponding locator slot self fixturing the frame~~provide a fixture~~ for fabrication.

15. (original) The rotary product processing device of claim 1, wherein the frame comprises a vertically extending end plate of one piece and unitary construction that carries the drive and the frame comprises a vertically extending cover that overlies the end plate forming a drive assembly housing therebetween and wherein the drive further comprises a drive assembly disposed in the drive assembly housing.

16. (currently amended) The rotary product processing device of claim 1, wherein the product processing chamber comprises a perforate drum, and further comprising a pair of non-metallic bearing cradles immovably attached to the frame with one of the non-metallic bearing cradles rotatively supporting one end of the perforate drum via an arcuate friction-bearing rotary bearing surface that is fixed relative to the frame and the other end of the non-metallic bearing cradles rotatively supporting the other end of the perforate drum via an arcuate friction-bearing rotary bearing surface that is fixed relative to the frame.

17. (currently amended) The rotary product processing device of claim 1, wherein the ~~frame~~ comprises a first end plate ~~plates are each of one piece and unitary construction that carries the drive and a second end plate of one piece and unitary construction that has~~ and have a bore formed there-through above the product processing chamber and further comprising in which is disposed a conduit overlying the product processing chamber and having one end received in the through bore in one of the end plates, its other end received in the through bore in the other one of the end plates, and comprising a plurality orifices spaced apart along the conduit from which fluid is dischargeable ~~is discharged during operation.~~

18. (currently amended) The rotary product processing device of claim 1, wherein the ~~frame~~ comprises an end plate of one piece and unitary construction that carries the drive is formed of a sheet of one-piece and unitary construction, wherein the drive is carried by the end plate and oriented so it overlies at least part of the product processing chamber, and further comprising a

~~drive driveline coupling the drive to the auger with the driveline arrangement that is also carried by the same end plate and which couples the drive to the auger that carries the drive.~~

19. (canceled)

20. (currently amended) A rotary product processing device comprising:

(Aa) a frame comprised of a plurality of end plates that are each of one piece and unitary construction and a sidewall of one piece and unitary construction that is joined along one side edge to one of the end plates and is joined along its other side edge to the other one of the end plates;

(Bb) a bearing cradle ~~mounted fixed~~ to each end plate of one-piece, unitary and homogenous polymeric construction having a radially inwardly facing arcuate fixed bearing surface;

(Cc) a tubular and perforate product processing chamber rotatively supported at or adjacent each end by one of the bearing cradles having a radially outwardly facing outer end surface that is rotatively supported on the radially inwardly facing arcuate fixed bearing surface;
and

(Dd) a drive mounted to one of the end plates that is coupled by a drive arrangement carried by the one of the end plates to the product processing chamber.

21. (currently amended) The rotary product processing device of claim 20, wherein each bearing cradle comprises a bearing ring that encircles the outside of a corresponding outwardly facing outer product processing chamber end surface with its radially inwardly facing arcuate bearing surface comprising an outer bearing surface that contacts the outwardly facing outer product processing chamber end surface that is curved along an axial direction that is generally parallel to an axis of rotation of the product processing chamber ~~does not move during operation and wherein each bearing cradle is comprised of at least one component that is of one piece, unitary, homogenous and non-metallic construction.~~

22. (currently amended) The rotary product processing device of claim ~~20~~²¹, wherein ~~each bearing cradle is of immovable, annular and non-metallic construction~~the curved outer bearing contact surface comprises a spherical or elliptical outer bearing contour.

23. (original) The rotary product processing device of claim 20, wherein the sidewall is constructed and arranged to underlie the processing chamber and form a fluid-holding tank.

24. (currently amended) The rotary product processing device of claim 20, further comprising ~~an~~ a generally helical auger disposed in the product processing chamber.

25. (currently amended) The rotary product processing device of claim 24, wherein the auger is carried by the product processing chamber for rotation substantially in unison therewith and wherein each radially outwardly facing outer end surface of the product processing chamber comprises a generally cylindrical journal that defines one of a product processing chamber inlet and product processing chamber outlet that projects outwardly in an axial direction from the product processing chamber.

26. (currently amended) A rotary product processing device comprising:

(Aa) a frame comprised of a plurality of end plates that are each of one piece and unitary construction and a sidewall of one piece and unitary construction that is engaged along one side edge to one of the end plates and is engaged along its other side edge to the other one of the end plates, wherein one of the end plates has an inlet bore and the other one of the end plates has an outlet bore;

(Bb) a first arcuate bearing cradle of one-piece, unitary, non-metallic and homogenous construction that is immovably fixed to one of the end plates and that comprises an arcuate radial bearing contact surface encircling ~~encompassing~~ at least a portion of the inlet bore;

(Cc) a second arcuate bearing cradle of one-piece, unitary, non-metallic and homogenous construction that is immovably fixed to the other one of the end plates and that comprises an arcuate radial bearing contact surface encircling ~~encompassing~~ at least a portion of the outlet bore;

(Dd) a tubular product processing chamber having a perforate body with a journal at each end with one journal rotatively supported by the arcuate radial outer bearing contact surface of one of the bearing cradles and the other journal rotatively supported by the arcuate radial outer bearing contact surface of the other one of the bearing cradles; ~~and~~

(Ee) a drive carried by the frame that is coupled to the product processing chamber;
and

(f) wherein the bearing contact surface of at least one of the bearing cradles comprises an elliptical or spherical contoured contact surface portion.

27. (original) The rotary product processing device of claim 26, wherein one of the first and second bearing cradles comprises both a rotary bearing and a thrust bearing.

28. (currently amended) A rotary product processing device comprising:

(Aa) a plurality of end plates and a sidewall extending therebetween, wherein one of the end plates has an inlet bore and the other one of the end plates has an outlet bore;

(Bb) a first annular bearing of non-metallic construction that is immovably fixed to one of the end plates and encompassing the inlet bore;

(Cc) a second annular bearing of non-metallic construction that is immovably fixed to the other one of the end plates and encompassing the outlet bore;

(Dd) a tubular product processing chamber having a perforate body with a journal at each end with one journal rotatively supported by the first annular bearing and the other journal rotatively supported by the second annular bearing; and

(Ee) a drive that is coupled to the product processing chamber for rotating the product processing chamber relative to the first and second annular bearings.

29. (currently amended) The rotary product processing device of claim 28, wherein one of the first and second annular bearings comprises both a rotary bearing and a thrust bearing, at least one of the first and second annular bearings is immovably fixable using a plurality of pairs of fasteners to one of a plurality of mounting positions enabling the one of the first and second annular bearings to be rotated and re-mounted to change the position of wear of the rotary bearing one of the first and second annular bearings, wherein the rotary bearing has a curved rotary bearing surface contour that contacts a radial surface of a corresponding one of the journals to rotatively support the journal during rotation of the product processing chamber.

30. (currently amended) A rotary product processing device comprising:

(Aa) a frame comprised of a plurality of end plates that are each of one piece and unitary construction and a sidewall of one piece and unitary construction that is engaged along one side edge to one of the end plates and is engaged along its other side edge to the other one of the end plates, wherein one of the end plates has an inlet bore and the other one of the end plates has an outlet bore;

(Bb) a first bearing disposed adjacent the inlet bore;

(Cc) a second bearing disposed adjacent the outlet bore;

(Dd) a tubular product processing chamber having a perforate body with a journal at each end with one journal rotatively supported by one of the bearings and the other journal rotatively supported by the other one of the bearings;

(Ee) a drive ~~carried by~~ mounted to one of the end plates and disposed so it is above and overlies part of the product processing chamber; and

(Ff) a drive arrangement that is carried by the one of the end plates that couples the drive to the product processing chamber enabling the drive to rotate the product processing chamber, wherein the drive arrangement comprises (i) a drive wheel driven by the drive, (ii) a driven wheel that rotates the product processing chamber when the driven wheel is rotated, and (iii) an endless flexible member that is oriented generally perpendicularly to the drive and generally parallel to a lengthwise direction of the one of the end plates that couples the drive wheel to the driven wheel transmitting rotary motion of the drive wheel when rotated by the drive to the driven wheel rotating the product processing chamber.

31. (currently amended) A rotary product processing device comprising:

(Aa) ~~a frame comprised of a plurality of~~ vertically extending end plates that are each of one piece and unitary construction and a sidewall of one piece and unitary construction disposed between the end plates that is engaged along one side edge to one of the end plates and is engaged along its other side edge to the other one of the end plates, wherein one of the end plates has an inlet bore and the other one of the end plates has an outlet bore;

(Bb) a first bearing arrangement of non-metallic and homogenous construction that is ~~mounted to~~ carried by one of the end plates adjacent and which encompasses at least part of the inlet bore;

(Cc) a second bearing arrangement of non-metallic and homogenous construction that is ~~mounted to~~ carried by the other one of the end plates adjacent and which encompasses at least part of the outlet bore;

(Dd) a tubular product processing chamber having a perforate body with a journal at each end with one journal rotatively supported by one of the bearing arrangements and the other journal rotatively supported by the other one of the bearing arrangements;

(Ee) a drive carried by one of the end plates and overlying the product processing chamber; and

(Ff) a drive arrangement that is carried by the one of the end plates that couples the drive to the product processing chamber with the drive arrangement extending in generally lengthwise direction relative to the one of the end plates along a vertically extending portion of the one of the end plates; and

(g) a vertically extending cover removably mounted to the one of the end plates that overlies at least a portion of the drive arrangement and the one of the end plates such that the drive arrangement is disposed between the vertically extending cover and the one of the end plates.

Please add the following new claims:

32. (new) The rotary product processing device of claim 3, wherein the driven wheel further includes a bore formed therein that also comprises one of the infeed and discharge with the driven wheel encircling the one of the infeed and discharge.

33. (new) The rotary product processing device of claim 30, wherein the driven wheel further includes a bore formed therein that also comprises one of the infeed and discharge with the driven wheel encircling the one of the infeed and discharge.

34. (new) A rotary product processing device comprising:

(a) a plurality of generally vertically extending end plates spaced apart by a sidewall with one of the end plates including a through-bore formed in it comprising an inlet and the other one of the end plates including a through-bore formed in it comprising a discharge;

(b) a first annular bearing disposed adjacent one of end plates and encircling one of the inlet and discharge;

(c) a second annular bearing disposed adjacent the other one of end plates and encircling the other one of the inlet and discharge;

(d) an elongate, tubular and perforate rotary product processing chamber rotatively supported at one end by the first annular bearing and rotatively supported at the other end by the second annular bearing;

(e) a rotary drive mounted to one of the end plates overlying the product processing chamber;

(f) a generally vertically extending drive arrangement coupling the rotary drive to the product processing chamber that is disposed along a generally vertically extending surface of the one of the end plates to which the rotary drive is mounted; and

(g) a cover mounted to the one of the end plates to which the rotary drive is mounted forming a housing with the one of the end plates that substantially encloses the drive arrangement between the cover and the one of the end plates.

35. (new) A rotary product processing device comprising:

(a) a plurality of generally vertically extending end plates spaced apart by a sidewall with one of the end plates including a through-bore formed in it comprising an inlet and the other one of the end plates including a through-bore formed in it comprising a discharge;

(b) a first annular bearing disposed adjacent one of end plates and encircling one of the inlet and discharge, the first annular bearing being of one-piece, unitary, non-metallic and substantially homogenous construction and having a radial bearing contact surface that is one of spherical and elliptical along an axial direction that is generally parallel to an axis of rotation of the rotary product processing device;

(c) a second annular bearing disposed adjacent the other one of end plates and encircling the other one of the inlet and discharge, the second annular bearing being of one-piece, unitary, non-metallic and substantially homogenous construction and having a radial bearing contact surface that is one of spherical and elliptical along an axial direction that is generally parallel to an axis of rotation of the rotary product processing device;

(d) an elongate, tubular and perforate rotary product processing chamber rotatively supported at one end on the radial bearing contact surface of the first annular bearing and rotatively supported at the other end on the radial bearing contact surface of the second annular bearing;

(e) a rotary drive that is operatively coupled to the product processing chamber by a driven wheel having a through-bore that comprises part of one of the inlet and discharge enabling rotation of the product processing chamber during operation.

36. (new) A rotary product processing device comprising:

(a) a plurality of generally vertically extending end plates spaced apart by a sidewall with one of the end plates including a through-bore formed in it comprising an inlet and the other one of the end plates including a through-bore formed in it comprising a discharge;

(b) a first annular bearing disposed adjacent one of the end plates and encircling one of the inlet and discharge, the first annular bearing being of one-piece, unitary, non-metallic and substantially homogenous construction and having a radial bearing contact surface that is one of spherical and elliptical along an axial direction that is generally parallel to an axis of rotation of the rotary product processing device;

(c) a second annular bearing disposed adjacent the other one of the end plates and encircling the other one of the inlet and discharge, the second annular bearing being of one-piece, unitary, non-metallic and substantially homogenous construction and having a radial bearing contact surface that is one of spherical and elliptical along an axial direction that is generally parallel to an axis of rotation of the rotary product processing device;

(d) an elongate, tubular and perforate rotary product processing chamber rotatively supported at one end on the radial bearing contact surface of the first annular bearing and rotatively supported at the other end on the radial bearing contact surface of the second annular bearing;

(e) a rotary drive mounted to one of the end plates overlying the product processing chamber, the rotary drive comprising an electric motor having an output shaft;

(f) a drive arrangement coupling the rotary drive to the product processing chamber that is disposed along a generally vertically extending surface of the one of the end plates to which the rotary drive is mounted, the drive arrangement comprising a driven wheel having a through-bore that encircles one of the inlet and discharge that is operatively coupled to the electric motor output shaft by an endless flexible member disposed at an angle relative to the electric motor output shaft; and

(g) a cover mounted to the one of the end plates to which the rotary drive is mounted forming a housing with the one of the end plates that substantially encloses the drive arrangement between the cover and the one of the end plates.